DOCUMENT RESUME

ED 244 668 JC 840 254

AUTHOR Groff, Warren H.
TITLE Quality Education. What Is It?
PUB DATE 84
NOTE 18p.; Paper presented at Practitioners' Hall of Fame, Nova University Summer Institute (1984).
PUB TYPE Reports - Descriptive (141) -- Speeches/Conference Papers (150) -- Viewpoints (120)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *College Planning; Community Colleges; *Educational Change; *Educational Quality; *Organizational Development; *School Business Relationship; School Community Relationship; Two Year Colleges
IDENTIFIERS *North Central Technical College OH

ABSTRACT

Major structural changes in society, involving a shift from physical production of material goods to productivity based on the exchange of ideas and knowledge, will necessitate fundamental changes in all of society's institutions, including the educational system. Among the new requirements of the educational system will be the need to plan and manage strategically and develop an awareness of the social, economic, and demographic environment in which the institution operates; an awareness of the institution's strengths and weaknesses; and a matching of institutional strengths with opportunities in the external environment. North Central Technical College is attempting to redesign and restructure itself to be more responsive to the needs of its service area during this structural economic shift. Elements of this process include: (1) relating program structure to the occupational structure of the future and the development of programs in key goals areas (e.g., information processing, electronic delivery of programs and services, and high technology); (2) the promotion of programmatic excellence, as exemplified by the college's associate degree program in nursing; (3) the increase in program flexibility through an emphasis on credit for life experiences and multiple ways for students to earn academic credit; (4) programs focused on skill retraining or upgrading developed in collaboration with local business and industry; and (5) an emphasis on leadership and service. (HB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED244668

QUALITY EDUCATION. WHAT IS IT?

by

Warren H. Groff, Ed.D.
Vice President for Academic Affairs
North Central Technical College
Mansfield, Ohio 44901

presented at

Practitioners' Hall of Fame
Nova University
Summer Institute 1984

JC 840 254

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
W. H. Groff
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
X This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

ABSTRACT

The problems facing postsecondary education will be numerous in the decade ahead. These problems are related to (1) projected decline in the number of high school graduates, (2) increased competition in education and training services, (3) the relationship of the existing program structure to the occupational structure of the future, (4) erosion of consensus about the returns to society for its investment in postsecondary education, (5) decreasing faculty mobility and the potential impact on morale, and (6) the need to improve the educational process with limited resources. No issues, however, will be as important as the relationship of postsecondary education to the economy and the redesign of the education and training industry. This paper begins with a conceptual framework which describes briefly (1) the structural economic shift occurring within the global economy, (2) changes in institutional planning processes, and (3) the emerging indicators of quality and characteristics of excellence. The paper then describes how a small, two-year technical college located in a rural setting is attempting to redesign and restructure itself to be responsive to the needs of its service area during this structural economic shift.

TABLE OF CONTENTS

Abstract	1
Conceptual Framework	1
Structural Economic Change	1
Changing Institutional Planning Processes	2
Changing Indicators of Quality	2
Selected Elements of Quality Education	5
Relationship of Program Structure to the Occupational Structure of the Future	5
Excellence In a Single Program	6
Program Flexibility	8
Retraining and Upgrading	9
Leadership and Service	11
Conclusion	13
Footnotes	14

CONCEPTUAL FRAMEWORK

The future of any institution, including postsecondary education, rests on the degree to which it meets the needs of the society of which it is a part. As society changes, so must postsecondary education change. The way in which a specific institution meets the challenge of being responsive to the needs of society is a function, for the most part, of the degree of synchronization of its planning process to the changing needs of society and the indicators of quality and characteristics of excellence in the delivery of services to its clientele. Society is in the process of a massive structural economic change. As a result, institutional planning processes are changing and new indicators of quality and characteristics of excellence are emerging. A comment about each of these shifts is important in order to set the stage for the discussion which follows.

The industrial nations of the world are in the turbulent times of a structural shift from an industrial society to a new type of society. This phenomenon is described by Zbigniew Brzezinski (Between Two Ages, 1970)[1], Daniel Bell (The Coming of Post-Industrial Society, 1973)[2], Alvin Toffler, (The Third Wave, 1980)[3], Yoneji Masuda (The Information Society As Post-Industrial Society, 1981)[4], John Naisbitt (Megatrends, 1982)[5], James Botkin (Global Stakes, 1982)[6], Amitai Etzioni (An Immodest Agenda, 1983)[7] and numerous other authors. In Megatrends, for example, Naisbitt states:

> Things are not going to get better, things are going to get different. We are not in a recession. We are in something much more profound than that. We are changing economies and we haven't changed economies for a hundred and fifty years.
>
> Of course there is a lot of uncertainty but we have got to make uncertainty our friend. We have had an economy that rested on the industrial sector, which has served us magnificently for so long, but now we are shifting to a new economy that rests on information and electronics. This is not going to happen tomorrow; it is happening today. We are more in the new economy than we are in the old economy.[8]

The transformation to the post-industrial, technical society based on information is a shift from physical productivity of material goods to productivity based upon the exchange of ideas and knowledge.

The transformation from an industrial society to a new type of society is causing institutions, systems, and state governments to develop new ways to plan and manage their affairs. During the post World War II years, institutional planning had a focus on acquiring more resources and building facilities for the increased number of students resulting from the "equal right" demand for access to postsecondary education. Thus, there was the preoccupation with providing facilities within commuting distance of the masses of population and the training of personnel to teach in those facilities. Planning, for the most part, dealt with variables internal to postsecondary education. During the 1970s the influx of traditional 18 to 22 year-old students began to stabilize. Many private and public institutions began to experience the impact of a broad range of demographic, economic, social, and political forces. Numerous organizations launched programs to assist colleges and universities develop comprehensive planning processes. These projects stressed the need to assess the institution's external environment as well as audit the institution's internal environment. The process of strategic planning and management is essentially one of matching opportunities in the external environment with strengths as determined by an internal audit. The intent is to maximize on strengths, minimize weaknesses, take advantage of opportunities, and reduce or eliminate threats.[9]

Paralleling these changes are shifts in the indicators of quality and characteristics of excellence. During the industrial society, institutions were organized around the principles of the decision of labor, hierarchial structure, and elements of standardization of the industrial society. Schools and colleges were designed primarily like broadcast television. Education and training services were delivered in uniform packages and in a manner and at a time convenient to the provider. Standards of excellence and quality were reflected in criteria such as (1) high entrance

examination scores of applicants, (2) length of time needed to obtain a degree, (3) percentage of students continuing to "upper level education", (4) number of basic and rare books, (5) number of square feet devoted to instructional activities, (6) number of student and faculty honors, (7) percentage of faculty members with earned doctorates, (8) number of faculty publications, (9) number of merit scholars, (10) high "flunk out" rate, and (11) applicants from many states.

In the past, postsecondary education saw its relationship to the economy primarily in terms of providing an educated and trained workforce. Much of the education and training that was provided in the early years of life lasted most of one's lifetime. Foreign competition, technological advances, changes in productivity, high costs, plant and industry obsolescence and infrastructure deterioration have caused, and will continue to cause, massive dislocations in our economy. In the future, postsecondary education must continue to provide an educated and trained workforce. But that will not be sufficient. New and expanded relationships will be required between postsecondary education and the economy in the technical society based on information. In addition, the education and training industry must redesign its delivery system so that it is user controlled--relevant, state-of-the-art, magazine styled programming that the consumer can use when it is needed, as often as needed, and see any part of the sequence. The delivery system should be based on the latest in brain research about how humans learn at various stages of development and use the latest in technology. Thus, the emerging standards of quality include the following dimensions:

1. Institutional goals are well defined and understood.
2. College services meet the needs of the diverse student body.
3. Faculty understands the learning process.
4. Operating faculty-staff development program.
5. Degree of success in educating higher risk students.

6. Occupational student prepared for employment.
7. Percentage of accepted job offers related to educational preparation.
8. Student performance on the job.
9. Student performance in additional educational pursuits.
10. Learning Resource Center usage—books, magazines, audio visual.
11. Student's ability to continue learning.
12. Student resourcefulness.
13. Active concern and/or participation in the world by graduates.
14. Facilities used by internal and external groups.
15. Professional staff involved in community affairs.
16. Positive reaction to the institution's mission.
17. Public awareness of the college.

Thus, the transition from an industrial society to a technical society based on information is causing fundamental shifts in the relationship between various sectors of society, particularly the relationship between postsecondary education and the economy. This transition is causing institutions to plan and manage strategically: (1) the collection and analysis of demographic, economic, social, and political data in the external environment to determine opportunities and threats; (2) the audit of an institution's strengths and weaknesses; and (3) a matching of institutional strengths with opportunities in the external environment. In addition, the redesign and restructuring of the education and training industry will be evaluated on the basis of a new set of indicators of quality and characteristics of excellence. This paper describes elements of the redesign and restructuring process at a two-year college.

SELECTED ELEMENTS OF QUALITY EDUCATION

Francis Keppel, former United States Assistant Secretary of Health, Education and Welfare, talks about The Necessary Revolution in American Education. He states:

> The first revolution in American education was a revolution in quantity. Everyone was to be provided the chance for an education of some sort. That revolution is almost won in the schools, and is on its way in higher education. The second revolution is equality in opportunity. That revolution is under way. The next turn of the wheel must be a revolution in quality.[10]

Although it would be difficult in a few brief paragraphs to define and discuss all of the dimensions of these important revolutions, this paper will discuss of few selected elements of quality education reflected in a small, two-year technical college in Ohio. These elements are (1) the relationship of the program structure to the occupational structure of the future, (2) excellence in a single program, (3) program flexibility, (4) retraining and upgrading, and (5) leadership.

North Central Technical College is a small, two-year institution located in a rural area of North Central Ohio. It offers two one-year certificate and fifteen associate degree technical programs to approximately 2,000 students in day and evening programs. Its primary service area consists of the rural counties of Ashland, Crawford, and Richland. It shares a campus with a branch of the Ohio State University which enrolls approximately 1,000 students in college transfer programs.

Relationship of Program Structure to the Occupational Structure of the Future. This element of quality consists of program synchronization as well as skills synchronization. Program synchronization refers to the aggregate match of a program with the needs of the college's service area. Is there a sufficient need for graduates of a particular program in the service area? Skills synchronization refers to the specific skills within a program to be the stage of development of major employers of students in the service area. If small job shops without computer-aided drafting are the major employers of drafting program graduates, to what extent should CAD skills be emphasized in the curriculum?

One way an institution can improve the synchronization between its program structure and the occupation structure of the future is through its planning process. In Fall of 1977, the College began a comprehensive institutional planning process by specifying assumptions and stating goals and objectives at the institutional and departmental levels. Assumptions were specified and goals and objectives were stated under the following categories:

Assumptions Categories	Goal and Objective Categories
1. Societal Context	1. Mission Attainment
2. External Agencies	2. Functional Relationships
3. Institutional Management	3. Qualitative Improvement
4. Programs	4. Program Development
5. Students and Enrollment	5. Professional Development
6. Student Services	6. Public Relations
7. Professional Development	7. Funding Sources
8. Physical Plant	
9. Equipment	
10. Fiscal Resources	

Facuity specified assumptions and stated goals and objectives across the above-named categories and then linked non-personnel dollars to specific objections. Most departments involved program advisory committees in the review of assumptions and goals and objectives, a process that continues today.

Assumptions stated at the institutional and departmental levels indicated that several stragetic goal areas were of paramount importance to the long-term economic viability of the College's service area, hence the college's programs. These strategic goal areas were (1) information processing, (2) electronic delivery of educational programs and services, and (3) high technology. This conceptual framework was used for making decisions about $2m of equipment and the submission to the Ohio Board of Regents of a FY 1985-90 Capital Plan. The College now has more terminal work stations per student that any other public postsecondary institution in Ohio[11].

Excellence in a Single Program. The ultimate goal of the health care delivery system is to provide equal access to quality health care at a reasonable cost. The goal of health education at the higher education and continuing education levels is to promote

improvement in the quality of health care services through the preparation of persons to perform specific roles in several different contexts. The higher education health education system attempts to assist persons to attain a minimum level of proficiency and scholarship in essential skills and the continuing education system attempts to assist persons to maintain and improve those essential skills.

The Associate Degree Nursing Program has established and maintained a high quality educational level throughout its nine year history at NCTC. This is evidenced by a 100% passage rate of graduates on the Ohio licensing examination, an examination taken by two-, three-, and four-year programs. In addition, the program received full accredition for eight years on its initial visitation from the National League of Nursing, the maximum number of years granted by NLN.

The area of continuing education is equally, if not more, important. In the fall of 1980, the College in cooperation with the Ohio Department of Health became the site of a Nursing Home Area Training Center for a ten-county North Central Ohio Region. The Center began by providing continuing education to all categories of personnel in over 100 nursing homes in the ten-county area. During 1981-82, the service area was expanded geographically to include other counties and the role was changed to include continuing education for nurses and allied health professionals in hospitals and community health agencies. During the first two years of its existence the Nursing Home Area Training Center/Nursing and Allied Health Education completed 96 programs accounting for 752 hours of continuing education for 1,932 individuals. Since then the Center has contributed in countless ways to human resource development in North Central Ohio.

Program excellence at one point in time, however, does not guarantee that level of quality in a dynamic context. Major changes are occurring in demographics, health conditions and causes of death, in the use of technology, and in the health care delivery system. There are major shifts in health care delivery from the acute care hospital setting to extended care facilities, and home health care. In the aggregate, there is a fundamental shift from "medicine" to "health promotion." These changes have tremendous implications for higher education degree and continuing education programs.

Program Flexibility. At the height of the industrial society, life was divided into three full-time phases: (1) education and training for the young, (2) work for the middle-aged; and (3) enforced leisure for the elderly. Then our culture began to promote mass education. Shortly thereafter, rapid technological change caused a shift from the linear life plan described above to a blended life plan that permits learning, work, and leisure to go on concurrently. In fact, technological change has become a driving force mandating lifespan education and training. In the full-time phase model, most persons received their education and training by attending school and college full time in an uninterrupted manner. In the integrated lifespan model, students acquire competencies through their lives. This latter model requires opportunities assessment, career planning, credit for life experience, proficiency testing, and multiple ways for acquiring competencies ranging from teacher-dependent formats to teacher-independent formats. Two examples of NCTC's flexibility are discussed: (1) experience for life experience and (2) multiple ways for students to get academic credit.

During 1979-80, the Academic Council and the Communications Department worked on plans for a new procedure for students who were seeking credit for learning they had acquired outside the formal classroom setting. The concept was based on the belief that what students know is more important than how they learned it. A new course, Portfolio Development 159, was conceived in order to credentialize students' "prior learning." During the course, students learn how to compile portfolios which describe and document knowledge and skills they already possess. Students match their knowledge and skills with courses for which they hope to obtain academic credit. A student submits his or her portfolio to be evaluated by a committee comprised of two faculty members in a particular program and the Divisional Director. A student can (1) receive full credit for a course or several courses, (2) receive partial credit and complete the remaining conpetencies through a contract, or (3) be denied credit. Students enrolling in the class must have a

least five years of related work experience. The first class was conducted in Fall of 1980. Credit was awarded to the first student on January 21, 1981, for the successful completion of Supervision I, II, and III in the Industrial Management Program. On February 6, 1981, 52 quarter hours of credit were awarded to a person with 32 years of work experience and various leadership positions in the community. Since then many persons have been awarded college credit through this protocol.

Portfolio credit is but one way for students to obtain credit at NCTC. Several years ago the College made a commitment to developing alternative ways for obtaining credit beyond the traditional classroom method. The College then developed a list of courses for each program and listed the multiple ways for students to obtain credit such as transfer, proficiency, portfolio, and directed study. (See FIGURE 1). In addition, the College began to develop formal articulation agreements with secondary schools and senior colleges. An example of such an articulation agreement for Pioneer Joint Vocational School is specified in FIGURE 1.

Retraining and Upgrading. Between August 1978 and December 1979, NCTC was a primary provider of programs to retrain unemployed persons in Richland County due primarily to the closing of Mansfield Tire and Rubber Company which put over 1000 persons out of work.[12] The project received national exposure in the education section of the January 9, 1979 edition of the New York Times, a January 1979 publication by the Service Center for Community College-Labor Union Corporation of the American Association of Community Junior Colleges, and an article in the May 1979 issue of VocEd.[13] The 1979 Annual Convention of the AACJC had a forum on "The Two-Year College as a Catalyst for the Local Economy." The Vice President for Academic Affairs of North Central Technical College made a presentation on retraining the unemployed as a part of a panel of persons. His remarks included the following statement.

> "The Mansfield Formula for Worker Renewal" is a "rehabilitation" model as opposed to a "prevention" model. The intervention strategy is the result of a crisis as opposed to a process designed to diagnose a potential problem and prevent the development of the malady. Nor is

> it a secondary prevention model, that of identification of an illness at an early stage in order to prevent its complication. The intervention occurred only after the crisis struck the fatal blow even though early warning signals had been transmitted over the past several years. Therein lies a major lesson for higher education, an agenda for the 1980's and beyond.[14]

Since then NCTC has become proactive to the needs of its service area in both the rehabilitation mode and the prevention mode. In the rehabilitation mode, it has worked with the Private Industry Councils under both CETA and JTPA in developing programs (1) for persons who are mainstreamed into the regular programs of the College and (2) for groups for which special training programs have been designed and run. Of equal or greater significance, however, is the focus on the prevention mode. On October 1, 1981, the Board of Trustees passed the following resolution about servcice to business and industry:

SERVICE TO BUSINESS AND INDUSTRY

> It is the policy of North Central Technical College to assist business and industry with instruction and non instructional services. Instructional services consist of credit and non-credit courses In the case of credit instruction, courses published in the NCTC catalog can be offered by the College in on-campus or off-campus locations. Continuing education instruction will be conducted through Community Education Services.
>
> Non-instructional services take a variety of forms, including consultation for a full array of services within the mission of the College and the expertise of its personnel. Under certain circumstances the agreement is strictly between College personnel and the contracting agency. The College encourages these relations because it provides assistance to the contracting agency and helps in human resource development. The consultation, however, shall not interfere with the performance of responsibilities delegated to personnel by the College. Under other circumstances business and industry may want to contract with the College for services of personnel, facilities, and equipment. These relationships are encouraged and shall be negotiated separately in consultation with the President's Cabinet.

The intention of the policy was for the College to become proactive in assisting business and industry to diagnose their needs and provide several avenues to respond to those needs.

An example of a proactive response is the College's relationship with a General Motors Fisher Body stamping plant, one of twelve in this nation. The College has a history of conducting a variety of training programs for GM's 3000+ hourly and salaried

personnel. Sometime in 1982 the plant was informed that all stamping plants would have to compete for an industry modernization program. During the Fall of 1982, the College worked with the plant to develop a comprehensive training program for apprentices and employees-in-training, a training plan intended to support a technological modernization plan that was evolving at the same time. The proposal developed by the plant was successful in that it was one of four of the total of twelve plants scheduled for modernization. The plan calls for a reduction from in excess of two hundred stamping presses to thirty presses while at the same time streamlining the operation to increase productivity. The College's new president is committed fully to assist the plant in this technological and human resource development transition. This spring quarter the College has numerous GM employees in regularly scheduled courses and 72 students in an intensive special training program.

Leadership and Service. During the past years the College has been attempting to redesign and restructure itself based on insights obtained from its strategic planning and management process. In addition to areas specified in this document, other significant additions include (1) a diagnostic screening mechanism for selected communications skills; (2) a Career Information Center; (3) a Data Processing Laboratory; (4) a Basic Peace Officer Training Program; (5) an advising system; (6) a Special Olympic Special Event for severely, profoundly and nonambulatory retarded persons; (7) the establishment of minimum competency standards in communications skills and selected programs; (8) a Saturday Enrichment School for talented and gifted children; (9) a writing laboratory to assist students develop better communications skills including technical report writing; and numerous other programs that contribute to the qualitative improvement of life. Three programs that relate directly to major issues facing postsecondary education are discussed briefly in the paragraphs which follow.

Part of Ohio's response to the plight of small businesses was the creation of the Ohio Technology Transfer Organization and the Ohio Job Training Consortia. OTTO is a statewide network consisting of The Ohio State University and two-year institutions working with state and federal agencies to provide small business and industry access to

information, advice, and services that are essential to economic development and job growth. OTTO agents have access to computerized data bases which include the National Technical Information Service and more than 200 Federal R and D laboratories and centers representing 11 Federal agencies in the Federal Laoratory Consortium.[15] OJTC is intended to help business and industry diagnose training needs and develop programs in response to diagnosed needs. The College has been a member of OJTC since 1980 and was asked to be a member of OTTO in fall of 1982, the third year of OTTO operation. Both agents are based at NCTC.

As a part of its continuing commitment to inform residents of the service area about state-of-the-art technology, the College conducted a seminar on the topic "Advancing Productivity Through Systems Automation" for corporate personnel on September 24, 1982. Donald M. Vicchiarelli, Division Systems Manager from General Tire and Rubber Company, made a presentation on "Re-industrialization: Social Adjustment." Participants were able to observe demonstrations on manufacturing software systems, data base management, the HP 3000 System, electronic mail and word processing, manufacturing and business graphics, and personal business and desktop computers. On March 17, 1983, the College conducted a "High Technology Seminar" again involving Mr. Vicchiarelli and providing a broader array of demonstrations in the afternoon. In preparation for that seminar, Challenge, the College's quarterly newsletter, contained an article entitled "High Technology. What Is It?" The article discussed types of technology and levels of development (low, medium, and high) in an effort to add clarity to the concept.[16]

These efforts by the College at attempting to redesign itself while at the same time improving its quality became a study by the National Center for Research in Vocational Education. NCRVE was asked to study interorganizational relationships and their contribution to quality education.[17]

CONCLUSION

During recent years we have experienced the onset of a transformation to a new type of society. Masuda indicates:

> Mankind is now entering a period of transformation from an industrial society to an information society.... Man is now standing at the threshold of a period of innovation in a new societal technology based on the combination of computer and communications technology, quite unlike any of the past. Its substance is information, which is invisible. This new societal technology will bring about societal transformation which, in a double sense, is unprecedented.[18]

This transformation to the information society is concerned with the shift from physical productivity of material goods to information productivity and can be expected to bring about fundamental changes in human values, in trends of thought, and in the political and economic structures of society. This learning and information society will be characterized as interactions between people and ideas and knowledge.

The onset of the high technology, information society has profound implications for an institutional commitment to computer literacy, use of new technology, and the public service function. Gollattscheck and others express the implications in terms of a new role for American postsecondary education. They state:

> We believe the time has come for a fourth major development in American postsecondary education: the creation of the community renewal college. The deterioration of our communities, the increasing inability of individuals and social organizations, and the increasing number of citizens with educational needs who are beyond the purview of existing colleges demand a new kind of postsecondary institution. This new college must be committed to the improvement of all aspects of community life....[19]

North Central Technical College has a proactive leadership role to play as a community renewal agent in the transformation from the industrial society to the technical, computer literate, information society. As the College continues through the redesign and restructuring process, it must continue to raise the fundamental questions (1) where has it been? (2) where is it now? and (3) where is it going? Throughout its evolution it must strive for quality in the programs it provides to its service area.

FOOTNOTES

1 Zbigniew Brzezinski, Between Two Ages (New York: Viking, 1980).

2 Daniel A. Bell, The Coming of Post-Industrial Society (New York: Basic Books, 1973.)

3 Alvin Toffler, The Third Wave (New York: William Morrow & Co., 1980).

4 Yoneji Masuda, The Information Society As Post-Industrial Society (Tokyo: Institute for Information Society, 1981).

5 John Naisbitt, Megatrends: Ten New Directions for Transforming Our Lives (New York: Warner Books, 1982).

6 James Botkin, Global Stakes: The Future of High Technology in America (Cambridge, Massachusetts: Ballinger, 1982).

7 Amitai Etzioni, An Immodest Agenda (New York: McGraw-Hill, 1983).

8 John Naisbitt, Megatrends: Ten New Directions for Transforming Our Lives (New York: Warner Books, 1982).

9 Warren H. Groff "Strategic Planning," in Strategic Management In The Community College edited by Gunder A. Myran (San Francisco: Jossey-Bass, 1983).

Warren H. Groff "Entrepreneurship Through Strategic Planning, Management, and Evaluation," Trustee Quarterly of the Association of Community College Trustees, Spring 1982, Vol. 6, No. 2, pp. 12-17.

10 Francis Keppel, The Necessary Revolution in American Education (New York: Harper and Row, Publishers, 1966), p. 3.

11 Computer Task Force Report (Columbus: Ohio Board of Regents, 1983).

12 Final Report: Project CARE, January 1980.

13 William L. Abbott, "The Mansfield Formula for Worker Renewal," VocEd, May 1979, Vol. 54, No. 5, pp. 38-41.

14 Warren H. Groff,"Technical Education As a Catalyst For the Local Economy," Journal of Studies in Technical Careers, Fall 1981, Vol. III, No. 4, pp. 368-380.

15 Warren H. Groff, "Strategic Planning of Technology Transfer," presented at the Economics Section Colloquium on "Emerging Technologies and Their Economic Impact," Ohio Academy of Science, April 23, 1982. Journal of Studies in Technical Careers, Summer 1983, Vol. V, No. 3, pp. 260-274.

16 Warren H. Groff, "Assisting A College's Science Area in the Transition to the New Technology Society Through Strategic Planning and Management," presented at Nova University's Practitioner's Hall of Fame, August 12, 1983. Ed 231 453. Abstract in Resources in Education, November 1983.

17 Allen Wiant, Catherine P. Warmbrod, and Frank C. Pratzner, Linkage of Vocational Education and Related Service Deliverers (Columbus, Ohio: The National Center for Research in Vocational Education, 1984).

18 Yoneji Masuda, The Information Society as Post-Industrial Society (Tokyo, Japan: Institute for the Information Society, 1981).

19 James F. Gollattscheck, Ervin L. Harlacher, Eleanor Roberts, and Benjamin R. Wygal, College Leadership for Community Renewal (San Francisco: Jossey-Bass, 1976).

ERIC Clearinghouse for Junior Colleges

JUN 29 1984